19 July 1967

PLEASE ACKNOWLEDGE RECEIPT FOR THE MATERIAL LISTED BELOW:

25X1 [redacted] Ltr-June Progress Report
Cys 3, 4, and 5 of 7 cys

25X1

25 July 1967
Date

[redacted]

Copy 3 - File in 998485 on 7/25
Copy 4 - " " [redacted] 07017 on 7/25
Copy 5 - To Paul L. on 7/25 (then into [redacted] notebook (book Copy) 25X1
Copy 2 - (7/31) From OL to TDS/DS : File in " " " ")

SECRET

[redacted] 25X1

Copy 3 of 7 Copies

17 July 1967

25X1 [redacted]

Subject: June Progress Report, [redacted] 25X1

25X1 [redacted]

1. In the study of Distortion Feedback Servo Loop Stability, approximately 32 percent of the work is completed; while on the Registration Correction Accuracy Program, approximately 45 percent of the work is completed. Image Dissector Scan Distortion is approximately 95 percent complete. ≈42%

Servo Loop Stab. 1.1 Technical Progress: The program to close the servo loop to eliminate displacement, scale and skew errors was written and debugged. Several preliminary tests were made on raster size, spot size and intensity to determine optimum combinations for maximum pull-in range.

Initially the program was written to cause X and Y displacement to be reduced first and then to operate on scale and skew errors. This subroutine was rewritten so that all errors are reduced simultaneously, as will be done in the hardware system.

Several subroutines have been added to ease the operator input task and facilitate an intensive testing phase. The display subroutine has been changed to show graphically, the error reductions.

Regist. Accuracy 1.2 The test photographic plates were evaluated by comparison against known standard samples and could be described as 30 line/mm material, except at the corners; the original camera

25X1 was a [redacted] Duplicate copies of identical and stereo plates were examined under both maximum and minimum zoom conditions. In each case three conditions of parallax clearance were investigated on a series of targets:

SECRET

[redacted] 25X1

Copy 3 of 7 Copies

1.2.1 Open Loop: Operator clears parallaxes on floating mark manually only with no electronics on and without moving plate between readings to determine accuracy of observation means.

1.2.2 Closed Loop: Operator clears parallaxes on floating mark with correlator operating, but without moving plate in between readings to determine accuracy of observation with servo disturbances included.

1.2.3 Closed Loop Plus Transport: Operator clears parallaxes on floating mark with correlator operating and moves plate in between readings to determine accuracy of automatic parallax clearance.

There was little difference between all of these cases, the standard deviation of parallax clearance referred to plate coordinates ranged between 2 and 4 x 10^{-4} inches (5 and 10 microns), and was considerably better in some cases. Since the differences between the various experimental conditions were so slight, it indicates that the correlation circuitry is operating nearly as well as the human operator in removing parallaxes from the model.

1.3 Image Dissector Scan Distortion: Electronic distortion of the scanning raster has been incorporated in the video-correlation breadboard for [redacted] 25X1 and will be included in the final system. Part of this effort was done under [redacted] 25X1

To date the circuits for modulating the deflection wave forms have been designed and built, and the distorted deflections (manually controlled) have been applied to the image dissector tubes. The distorted rasters have been observed with a monitor scope. Further testing will be carried out under [redacted] 25X1

2. Next Month:

Servo loop Stability

2.1 An intensive test phase will be started to determine maximum pull-in ranges for each type of distortion, and the limits on distortions when all are present simultaneously. Investigations on feedback parameters as they affect pull-in will be conducted. The elimination of peak and valley count as a feedback parameter will be investigated. All of the above tests will be made for a variety of images and densities.

SECRET

[redacted] 25X1

Copy 3 of 7 Copies

Registration Accuracy

2.2 The above experiments revealed some minor deficiencies in the apparatus (zoom lens focus adjustment, floating mark illumination and quality) which will be corrected next month. A detailed test plan will be prepared and the position of the floating mark on the scan raster and field of view will be calibrated. Final tests will then be executed.

Scan Distortion

2.3 Preliminary test results will be reported under [redacted] 25X1
insofar as they are consistent with the [redacted] schedule; that is, 25X1
a portion of the testing will be completed later than is scheduled under
25X1 [redacted]

Sincerely,

[redacted] 25X1

Project Manager

25X1 [redacted]

SECRET

Next 2 Page(s) In Document Exempt

Approved For Release 2004/07/29 : CIA-RDP78B04770A000200010054-1